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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/567,587

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Chisato Hoshino

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EXAMINER

OJURONGBE, OLATUNDE S

ART UNIT

PAPER NUMBER

1796

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/567,587	<b>Applicant(s)</b> HOSHINO, CHISATO	
	<b>Examiner</b> OLATUNDE S. OJURONGBE	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20060502</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities:

page 5, lines 5-13 discloses “R<sup>1</sup> is a hydrolytic functional group containing an alkoxysiloxy group having 1 to 4 carbon atoms” and further discloses examples of the functional group. The examiner notes that the disclosed examples are alkoxysilyl instead of alkoxysiloxy.

Page 5, lines 14-20 discloses “R<sup>2</sup> is selected from the group comprising oligosiloxanes or long-chain alkyls..”, since the oligosiloxanes are substituents on a siloxane compound, they should be referred to as oligosiloxys rather than oligosiloxanes, as this makes the disclosure confusing. This change should be made wherever the error occurs throughout the application.

Appropriate correction is required.

### CLAIM ANALYSIS

2. The instant claim 1 recites "R<sup>1</sup>: a group containing an alkoxysiloxy group having 1 to 4 carbon atoms", however, upon considering the application as a whole, the examiner notes that the examples of the functional group disclosed in the specification are alkoxysilyl instead of alkoxysiloxy. For the purpose of this office action, alkoxysiloxy is taken as alkoxysilyl.

### *Claim Objections*

3. **Claims 1, 3 and 4** are objected to because of the following informalities:

In claim 1, the use of colon ":" in the definition of the units of formula (1) should be replaced with "is" or "are" as appropriate.

Claim 1 recites "R<sup>2</sup>: a siloxane represented...", since R<sup>2</sup> is a unit of a compound instead of a compound, "siloxane" should be changed to "siloxy".

Claim 3 recites "The composition of claim 2, the composition further comprising...". The underlined statement is redundant and should be deleted from the claim.

Claim 4 recites "...diamond, aluminum hydroxide and carbon and surface-treated products of these compounds". The underlined word is redundant and should be replaced with a comma ",".

Appropriate corrections are required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 1-5** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites “R<sup>1</sup>: a group containing an alkoxysiloxy group having 1 to 4 carbon atoms”; it is unclear whether the 1 to 4 carbon atoms are of the alkoxy groups attached to the silicon atom of the alkoxysiloxy group or that the 1 to 4 carbon atoms are of the alkoxysiloxy group as a whole.

Alkoxysiloxy is underlined because as explained above, this should be alkoxysilyl.

Dependent claims 2-5 are rejected for the same reasons.

Claim 2 recites “The composition of claim 1, wherein the hydrolytic group-containing siloxane ....”; since the applicants claim the R<sup>2</sup> group of formula (1) as a siloxane, it is unclear whether by the hydrolytic group containing siloxane of the claim, the applicants mean R<sup>2</sup> group wherein Y is R<sup>1</sup> or the siloxane of formula (1).

Dependent claims 3-4 are rejected for the same reason.

Claim 3 recites “..in an amount of 10 to 3000 parts by weight based on a total of 100 parts by weight of the hydrolytic group-containing siloxane and the curable functional group”; it is unclear whether by 100 parts by weight of the hydrolytic group-containing

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siloxane and the curable functional group the applicants mean just the weight of the two functional groups or the weight of the two polymers containing the functional groups.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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9. **Claims 1 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Deng et al (US 6,235,832)**.

Regarding **claim 1**, Deng et al teaches a room temperature vulcanizing (RTV) silicone composition comprising polydiorganosiloxanes and a filler (abstract), and exemplifies a composition comprising polymer 5 and silica filler (col.20, lines 1-15). Deng et al further teaches polymer 5 as a mixture of polydimethylsiloxanes primarily comprising polydimethylsiloxanes having the formula of col.17, lines 1-20.

Considering the cyclic group on the left hand side of the structure of col.17, lines 1-20, the three  $(\text{H}_3\text{C}-\text{O})_3\text{-Si-C}_2\text{H}_4\text{-Si-O}(\text{CH}_3)$  serve as the  $\text{R}^3\text{-(Si-O)}_a\text{-X-R}^1$  of the instant claim, wherein  $\text{R}^3$  is  $\text{CH}_3$ , X is  $\text{C}_2\text{H}_4$  and  $\text{R}^1$  is  $(\text{H}_3\text{C}-\text{O})_3\text{-Si}$  and the  $(\text{CH}_3)\text{Si-C}_2\text{H}_4\text{-Si}(\text{CH}_3)_2\text{-(O-Si}(\text{CH}_3)_2)_h\text{-O-Si}(\text{CH}_3)_2\text{-C}_2\text{H}_4\text{-right cyclic group}$  serves as  $\text{R}^3\text{-(Si-O)}_b\text{-X-R}^2$  of the instant claim, wherein  $\text{R}^3$  is  $\text{CH}_3$ , X is  $\text{C}_2\text{H}_4$  and  $\text{R}^2$  is  $\text{-(O-Si}(\text{CH}_3)_2)_h\text{-O-Si}(\text{CH}_3)_2\text{-C}_2\text{H}_4\text{-right cyclic group}$ ; the right cyclic group serves as Y-wherein Y is  $\text{R}^1$ , a group containing an alkoxysilyl group- of the formula (2) of the instant claim.

Though Deng et al does not teach the thermal conductive silicone composition comprising a siloxane containing a hydrolytic group represented by the formula (1), wherein d is an integer of 2 to 500 of the instant claim, Deng et al further teaches that h is a value such that the polyorganosiloxanes have a viscosity more preferably within a range of about 5 to 200 Pa.s at  $25^\circ\text{C}$  (col.3, lines 45-55). Since Deng et al teaches a range of preferably about 5 to 200 Pa.s for the polyorganosiloxanes of the invention and exemplifies polymer 5 with a viscosity of 170 Pa.s, it would have been obvious to one of

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ordinary skill in the art to have formed various forms of the polymer 5 of Deng et al, with viscosities in the range of about 5 to 200 Pa.s at 25°C. The examiner notes a considerable overlap in the h values that give the polyorganosiloxanes of Deng et al a viscosity range of about 5 to 200 Pa.s at 25°C and the claimed range of d. In the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art a *prima facie* case of obviousness exists.

The limitation "A thermal conductive silicone composition" is an inherent property of a composition which depends on the components of the composition. Since Deng et al teaches compositions with components that all fall within the ranges of the components of the composition of the instant claim, such compositions of Deng et al are thermal conductive silicone compositions.

Regarding **claim 5**, Deng et al further teaches methyl and alkenyl radicals as equivalent groups on the polydiorganosiloxanes of the invention (col.3, lines 30-44). The composition of Deng et al with one or more alkenyl radicals on the polydiorganosiloxane is an addition reaction-curable type composition.

10. **Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Ritscher et al (US 5,359,109)**.

Regarding **claim 1**, Ritscher et al teaches a paint formulation comprising a surface-active siloxane compound (col.7, lines 1-11); said surface-active siloxane compound having the general formula II, wherein R is an alkyl group having 1 to 6 carbon atoms,



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R<sup>1</sup> is selected from a group that includes an aralkyl group having 7 to 13 carbon atoms and an alkaryl group having 7 to 13 carbon atoms.

The siloxane compound of the general formula II of Ritscher et al serves as the siloxane containing a hydrolytic group represented by the formula (1) of the instant claim, wherein, (RO)<sub>x</sub>R<sup>1</sup><sub>3-x</sub>SiR<sup>2</sup>SiQ and [-SiRR<sup>1</sup>O]<sub>m</sub> of Ritscher et al serve as R<sup>3</sup>-(Si-O)<sub>a</sub>-X-R<sup>1</sup> and R<sup>3</sup>-(Si-O)<sub>b</sub>-X-R<sup>2</sup> of the instant claim respectively.

The aralkyl group having 7 to 13 carbon atoms and the alkaryl group having 7 to 13 carbon atoms of Ritscher et al teaches the X-R<sup>2</sup> of the instant claim-wherein R<sup>2</sup> is a monovalent hydrocarbon group having 6 to 18 carbon atoms- with sufficient specificity to constitute an anticipation under the statute.

Though Ritscher et al does not explicitly teach a thermal conductive silicone composition comprising a siloxane containing a hydrolytic group represented by the formula (1) wherein the R<sup>3</sup> of R<sup>3</sup>-(Si-O)<sub>a</sub>-X-R<sup>1</sup> is that of the instant claim, since Ritscher et al teaches that Q is R<sup>1</sup> or X and that R<sup>1</sup> is selected from the group that includes an alkyl group having 1 to 6 carbon atoms, one of ordinary skill in the art would have formed various forms of the siloxane compound of the general formula II of Ritscher et al, including those wherein Q is an alkyl group having 1 to 6 carbon atoms.

Since the paint composition of Ritscher et al contains the surface-active siloxane compound, then the paint composition of Ritscher et al is a silicone composition.

Furthermore, the limitation "A thermal conductive silicone composition" is an inherent property of a composition which depends on the components of the composition; since Ritscher et al teaches compositions with components that all fall within the ranges of the

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components of the composition of the instant claim, such compositions of Ritscher et al are thermal conductive silicone compositions.

***Allowable Subject Matter***

11. Claims 2-4 are allowable over prior art because there is no reference or combination of references that suggests the limitations of the claims.

***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLATUNDE S. OJURONGBE whose telephone number is (571)270-3876. The examiner can normally be reached on Monday-Thursday, 7.15am-4.45pm, EST time, Alt Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571)272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

O.S.O.

/Randy Gulakowski/  
Supervisory Patent Examiner, Art Unit 1796